CLAIMS

What is claimed is:

1.   In a wireless communication system, a method of controlling transmission power to adjust the step size of a target signal-to-interference ratio (SIR) to compensate for channel conditions affected by block error rate (BLER), the method comprising:

in a settling state, initializing a plurality of parameters including (i) an inner loop settling time, (ii) a steady state step size, (iii) a transient state step size and (iv) a transmission timing interval (TTI) count;

in the settling state, incrementing the TTI count until the product of the TTI count and the length of TTI is greater than the inner loop settling time;

in a transient state, adjusting the target SIR based on the occurrence of a cycle redundancy check (CRC) and at least one step size parameter; and

in a steady state, adjusting the target SIR based on a CRC and at least one step size parameter.

2.   The method of claim 1 further comprising using the step size parameter to determine a convergence speed to the target SIR.

3.   The method of claim 1 further comprising decrementing the SIR target using a step down parameter in the transient state.

4.   The method of claim 3 wherein the step down parameter is equal to the product of a block error rate (BLER) and the step size.

5.   The method of claim 1 further comprising incrementing the SIR target using a step up parameter in the transient state.

6.   The method of claim 5 wherein the step up parameter is equal to the difference between the step size and the step down parameter.

7.   The method of claim 1 further comprising decrementing the SIR target using a step down parameter in the steady state.

8.   The method of claim 7 wherein the step down parameter is equal to the product of a block error rate (BLER) and the step size.

9.   The method of claim 8 wherein the step down parameter is equal to the product of 2*BLER and the step size.

10.   The method of claim 1 further comprising incrementing the SIR target using a step up parameter in the steady state.

11.   The method of claim 10 wherein the step up parameter is equal to the difference between the step size and the product of a block error rate (BLER) and the step size.

12.   The method of claim 1 further comprising setting the target SIR to the previous target SIR + (step up)* N_e – (step down)*(N_b - N_e), wherein N_b is the number of transport blocks per TTI, N_e is the number of CRC errors per TTI, (step up) is a parameter used to increment the target SIR and (step down) is a parameter used to decrement the target SIR.

13.   The method of claim 1 further comprising setting the target SIR to the previous target SIR – (step down)*(N_b), wherein N_b is the number of transport blocks per TTI and (step down) is a parameter used to decrement the target SIR.

14.   A wireless communication system for controlling transmission power to adjust the step size of a target signal-to-interference ratio (SIR) to compensate for channel conditions affected by block error rate (BLER), the system comprising:

means for initializing, in a settling state, a plurality of parameters including (i) an inner loop settling time, (ii) a steady state step size, (iii) a transient state step size and (iv) a transmission timing interval (TTI) count;

means for incrementing, in the settling state, the TTI count until the product of the TTI count and the length of TTI is greater than the inner loop settling time;

first means for adjusting, in a transient state, the target SIR based on the occurrence of a cycle redundancy check (CRC) and at least one step size parameter; and

second means for adjusting, in a steady state, the target SIR based on a CRC and at least one step size parameter.

15.   In a wireless communication system, a method of controlling transmission power to adjust the step size of a target signal-to-interference ratio (SIR) to compensate for channel conditions affected by block error rate (BLER), the method comprising:

initializing a plurality of parameters including (i) an inner loop settling time, (ii) a first step size, (iii) a second step size and (iv) a transmission timing interval (TTI) count;

incrementing the TTI count until the product of the TTI count and the length of TTI is greater than the inner loop settling time;

adjusting the target SIR based on the occurrence of a cycle redundancy check (CRC); and

adjusting the target SIR based on a CRC.

16. The method of claim 15 further comprising using a step size parameter to determine a convergence speed to the target SIR.

17. The method of claim 15 further comprising decrementing the SIR target using a step down parameter.

18. The method of claim 17 wherein the step down parameter is equal to the product of a block error rate (BLER) and the step size.

19. The method of claim 15 further comprising incrementing the SIR target using a step up parameter.

20. The method of claim 19 wherein the step up parameter is equal to the difference between the step size and the step down parameter.

21. The method of claim 15 further comprising decrementing the SIR target using a step down parameter.

22. The method of claim 21 wherein the step down parameter is equal to the product of a block error rate (BLER) and the step size.

23. The method of claim 22 wherein the step down parameter is equal to the product of 2*BLER and the step size.

24. The method of claim 15 further comprising setting the target SIR to the previous target SIR + (step up)* N_e − (step down)*(N_b - N_e), wherein N_b is the number of transport blocks per TTI, N_e is the number of CRC errors per TTI, (step up) is a parameter used to increment the target SIR and (step down) is a parameter used to decrement the target SIR.

25. The method of claim 15 further comprising setting the target SIR to the previous target SIR – (step down)*(N_b), wherein N_b is the number of transport blocks per TTI and (step down) is a parameter used to decrement the target SIR.

26. A wireless communication system for controlling transmission power to adjust the step size of a target signal-to-interference ratio (SIR) to compensate for channel conditions affected by block error rate (BLER), the system comprising:

means for initializing a plurality of parameters including (i) an inner loop settling time, (ii) a first step size, (iii) a second step size and (iv) a transmission timing interval (TTI) count;

means for incrementing the TTI count until the product of the TTI count and the length of TTI is greater than the inner loop settling time;

first means for adjusting the target SIR based on the occurrence of a cycle redundancy check (CRC); and

second means for adjusting the target SIR based on a CRC.